

Red Line/Blue Line Connector Project

Boston,
Massachusetts

Massachusetts Department of Transportation
Boston, Massachusetts



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Table of Contents

1	Introduction	1-1
1.1	Environmental Justice Policy	1-1
1.2	Regulatory Context	1-4
1.3	Methodology	1-4
2	Affected Environment	2-1
2.1	Environmental Justice Characteristics of Boston	2-1
2.2	Environmental Justice Characteristics of the Project Area	2-2
2.3	Selected Resource Characteristics of the Project Area	2-4
3	Environmental Consequences	3-1
3.1	Project Overview	3-1
3.2	No-Build Alternative	3-2
3.3	Alternative 1: Eliminate Bowdoin Station	3-3
3.4	Alternative 2: Relocate Bowdoin Station	3-4
3.5	Construction Activities	3-6
3.6	Summary	3-7
4	Public Outreach	4-1

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List of Tables

Table No.	Description	Page
2-1	State-listed Environmental Justice Populations within 0.5 mile of the Project Area	2-3

List of Figures

Figure No.	Description
2-1	Environmental Justice Neighborhoods Within 0.5-mile of the MBTA Red Line and Blue Line Corridors
2-2	Environmental Justice Areas in the Urban Core
2-3	Environmental Justice Communities, MBTA Red Line/Blue Line Connector Project Study Area

List of Appendices

Appendix	Description
A	CTPS Study
B	Working Group and Team Contact List

1

Introduction

This technical memorandum describes the environmental justice populations within and surrounding the Massachusetts Bay Transit Authority (MBTA) Red Line/Blue Line Connector Project area, and the potential effects that the Project may have to those populations. Key Project goals include several that would benefit environmental justice populations:

- Linking residents in East Boston and the North Shore with jobs, services, and educational opportunities in Boston's West End and the Cities of Cambridge and Somerville;
- Enhancing regional access to Massachusetts General Hospital (MGH), the Massachusetts Eye and Ear Infirmary, and the surrounding medical facilities;
- Expanding transportation options for residents in Boston's West End and Beacon Hill neighborhoods; and
- Improving access from Cambridge, Somerville, and northwestern suburbs to jobs, services, and attractions in downtown Boston, East Boston, the North Shore, and at General Edward Lawrence Logan International (Logan) Airport.

1.1 Environmental Justice Policy

Environmental justice is an important element of policy-making in transportation planning. It is based on the principle that all people have the right to be protected from environmental pollution and to live in and enjoy a clean and healthful environment. Environmental justice policies focus on improving the natural environment in disadvantaged communities, addressing disproportionate adverse environmental impacts that exist in those communities, and providing opportunities for residents to participate in the decision-making processes that may affect them.

The Massachusetts Executive Office of Energy and Environmental Affairs¹ (EEA) Environmental Justice Policy² characterizes environmental justice populations as neighborhoods, comprised of block groups defined by the U.S. Census Bureau, which meet one or more of the following criteria:

- Median annual household incomes are at or below 65 percent of the statewide median (\$30,515 in 2000);
- Minority residents are 25 percent or more of the population;
- Foreign-born residents are 25 percent or more of the population; or
- Residents lacking English language proficiency comprise 25 percent or more of the population.

A different set of criteria to define environmental justice areas is used by the Boston Metropolitan Planning Organization (MPO). The MPO assigns environmental justice status to transportation analysis zones (TAZs) rather than US Census blocks, and differentiates between two types of analyses:

- Environmental justice areas for outreach and accessibility analyses have a total minority (non-white or Hispanic) population of over 200 residents and meet one or both of the following criteria:
 - Median annual household incomes are at or below 60 percent of the 2000 MPO region median household income of \$55,800 (\$33,480); or
 - Minority (non-white or Hispanic) residents are 50 percent or more of the population.
- Environmental justice areas for mobility, congestion, and environmental analyses have a total minority (non-white or Hispanic) population of over 200 residents and meet one or both of the following criteria:
 - Median annual household incomes are at or below 80 percent of the 2000 MPO region median household income of \$55,800 (\$44,640); or
 - Minority (non-white or Hispanic) residents are 21.4 percent or more of the population.

EEA's Environmental Justice Policy is an effort to protect the environment and public health in the Commonwealth. The policy makes environmental justice an integral consideration in implementing all state environmental programs including, but not limited to, granting financial resources, implementing and enforcing laws, regulations, and policies, and providing access to both active and passive open space. The policy focuses attention on the high-minority/low-income neighborhoods

¹ Formerly known as the Massachusetts Executive Office of Environmental Affairs.

² EEA. 2002. *Environmental Justice Policy of the Massachusetts Office of Energy and Environmental Affairs*. Commonwealth of Massachusetts, Executive Office of Energy and Environmental Affairs: Boston.

in Massachusetts where residents are likely to be unaware of or unable to participate in environmental decision-making or to gain access to state environmental resources. A disproportionate impact occurs if the adverse effects to environmental justice populations would be appreciably more severe or greater in magnitude than the adverse effects that would be experienced by non-environmental justice populations in the same community.

This evaluation was completed to meet the EEA policy requirements for Massachusetts Environmental Policy Act (MEPA) analysis of the Red Line/Blue Line Connector Project. In the event that the Project is supported by federal funding, compliance with federal environmental justice policy will also be required. The analysis therefore also addresses the requirements of federal orders and guidance documents:

- Executive Order 12898³ states “each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies and activities on minority and low-income populations.”
- US Department of Transportation (DOT) Order 5610.2⁴ requires all DOT agencies to determine whether activities will have an adverse impact on minority and low-income populations. DOT agencies must determine if adverse effects are predominantly borne by a low-income or minority population and if adverse effects are appreciably more severe than the adverse effect that would be suffered by the non-minority or non-low-income population.
- The US Environmental Protection Agency (EPA) defines environmental justice as “[t]he fair treatment and meaningful involvement of all people, regardless of race, color, national origin or income with respect to the development, implementation, and enforcement of environmental laws, regulations and policies. Fair treatment means that no group of people, including racial, ethnic, or socio-economic groups should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal and commercial operations or the execution of federal, state, local and tribal programs and policies.”⁵ EPA has responsibility for the consideration of environmental justice in Clean Air Act reviews.

3 Clinton, President William J. 1994. *Executive Order: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*. The White House: Washington, DC.

4 US Department of Transportation. 1997. *Department of Transportation (DOT) Order to Address Environmental Justice in Minority Populations and Low-Income Populations*. Federal Register, Vol. 62, No. 72, pages 18377-18381. Washington, DC.

5 Environmental Protection Agency. 1998. *Final Guidance for Incorporating Environmental Justice Concerns in EPA's NEPA Compliance Analysis*. EPA, Office of Federal Activities. Washington, DC.

1.2 Regulatory Context

The MEPA regulations require “a detailed description and assessment of the negative and positive potential environmental impacts of the Project and its alternatives. The EIR [Environmental Impact Report] shall assess (in quantitative terms, to the maximum extent practicable) the direct and indirect potential environmental impacts from the Project that are within the Scope. The assessment shall include both short-term and long-term impacts for all phases of the Project (e.g., acquisition, development, and operation) and cumulative impacts of the Project, any other Projects, and other work or activity in the immediate surroundings and region.”⁶

An Expanded Environmental Notification Form⁷ describing the Project was submitted to the MEPA Office in September 2007 by the Massachusetts Executive Office of Transportation (now incorporated into the Massachusetts Department of Transportation, MassDOT). The Secretary of the EEA issued a Certificate⁸ on the EENF on November 15, 2007. The Certificate lists the requirements for overall Project evaluation in an EIR, but there are no specific requirements for analysis of impacts to environmental justice populations. Accordingly, this memorandum responds to general MEPA requirements for environmental justice analysis.

1.3 Methodology

MassGIS mapping⁹ developed by EEA indicates that portions of Boston and outlying suburbs served by the Red Line and the Blue Line include environmental justice neighborhoods that may be affected by the Project. The US Census blocks of neighborhoods meeting one or more of the EEA environmental justice criteria were reviewed with respect to the Red Line/Blue Line Connector Project area to determine potential direct and indirect effects, as described below. A summary review of the neighborhoods meeting EEA environmental justice criteria along the Red Line and Blue Line routes was also conducted.

Potential direct effects to environmental justice populations within or adjacent to the Project area were evaluated for neighborhood fragmentation, increases in noise levels or decreases in air quality, and impacts to other resources. If any adverse impacts to these resources in environmental justice neighborhoods were found to be substantive, then a comparison of impacts to non-environmental justice neighborhoods was made to determine if the impacts would be disproportionate.

6 Massachusetts Environmental Policy Act Office. 2009. Code of Massachusetts Regulations, Title 301, Chapter 11.00: MEPA Regulations. Section 11.07- EIR Preparation and Filing, (6) Form and Content of EIR, (h) Assessment of Impacts. (301 CMR 11.07(6)(h)). EEA, Massachusetts Environmental Policy Act Office: Boston.

7 EOT. 2007. *Red Line/Blue Line Connector Expanded Environmental Notification Form*. Commonwealth of Massachusetts, Executive Office of Transportation and Public Works. Prepared by TranSystems Corporation: Medford MA.

8 EEA. 2007. *Certificate of the Secretary of Energy and Environmental Affairs on the Expanded Environmental Notification Form*. Commonwealth of Massachusetts, Executive Office of Energy and Environmental Affairs: Boston.

9 Website: <http://www.mass.gov/mgis/massgis.htm>.

Potential indirect effects to environmental justice populations were also evaluated. Indirect effects are expected to be beneficial rather than adverse. This qualitative evaluation also included a review of indirect effects to environmental justice populations in nearby communities served by the Red Line or the Blue Line.

A study conducted by the Central Transportation Planning Staff (CTPS) of the Boston MPO examined how the Red Line/Blue Line Connector Project would affect transit access and transit time for residents of environmental justice areas meeting MPO criteria, at both the local and regional levels. The studies evaluated three factors for environmental justice and non-environmental justice populations for the Project alternatives:

- Accessibility to basic, retail, and service jobs;
- Accessibility to colleges, universities, and hospitals; and
- Changes in travel time.

For this evaluation, the local portion of the CTPS study focused on changes for residents of Boston and Cambridge, within 0.5 mile of the Project area. The regional portion of the CTPS study focused on changes for residents of Revere, at the northern end of the Blue Line, as representative of populations distant from the immediate Project area but still potentially benefitting from the Project. Results of the CTPS study are incorporated in this memorandum, and a copy is provided in Appendix A.

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2

Affected Environment

This Chapter describes the existing conditions of environmental justice populations in the City of Boston, and focuses specifically on the Red Line/Blue Line Connector Project area. Selected resources potentially impacted by the Project and pertinent to the environmental justice policy are also described.

2.1 Environmental Justice Characteristics of Boston

Based on US Census Bureau data from 2000, the City of Boston as a whole (i.e., not disaggregated to the US Census block level) exhibits the following demographic characteristics in relationship to the EEA's environmental justice criteria.

- The median annual household income was \$39,629, which is 129 percent of the statewide median (\$30,515 in 2000). Boston as a whole does not meet the environmental justice criteria of median annual household income at less than or equal to 65 percent of the statewide median income.
- Minority residents were 55.5 percent of the population. Boston meets the environmental justice criteria of greater than or equal to 25 percent minority population.
- Foreign-born residents were 25.8 percent of the population. Boston meets the environmental justice criteria of greater than or equal to 25 percent foreign-born population.
- Residents lacking English language proficiency were 16.3 percent of the population. Boston does not meet the environmental justice criteria of greater than or equal to 25 percent of the population lacking English language proficiency.

The Red Line provides transit service from northwestern suburbs through downtown Boston to southern and southeastern suburbs. The Blue Line provides transit service between downtown Boston and northeastern suburbs. The Red Line

and the Blue Line are the only two subway services in the MBTA system that are not directly connected. Neighborhoods in Boston and the suburbs meeting one or more of the environmental justice criteria are present along the lengths of the Red Line and the Blue Line, shown in Figure 2-1.

The MPO has mapped the TAZs meeting environmental justice criteria for the entire MPO region and the “urban core.” Boston and 15 other municipalities in the MPO region include TAZs meeting the MPO’s low income, minority, or low income and minority criteria.¹⁰ Figure 2-2 shows the TAZs meeting the MPO’s low income, minority, or low income and minority criteria in the urban core. None of the TAZs in the central Boston area are identified as meeting any MPO environmental justice criterion. Large areas north and south of central Boston, and selected areas to the west, do meet these criteria. Within the TAZs meeting any MPO environmental justice criteria, 66 percent of the population is minority and the median household income is between 27 and 88 percent of the region’s median household income.¹¹

2.2 Environmental Justice Characteristics of the Project Area

The study area for direct impacts to environmental justice populations is the Cambridge Street corridor in which the Red Line-Blue Line Connector would be constructed, plus a 0.5-mile radius around the stations at either end, thereby encompassing the Cambridge Street corridor. One-half mile is generally considered the maximum distance that an average person would walk to access transit services.

The Red Line/Blue Line Connector Project is located in the West End of Downtown Boston, a densely populated, multi-use area with residential, commercial, institutional, and transportation land uses. A 0.5-mile radius around the Project area extends into other areas of the city, such as Downtown, the North End, and Beacon Hill, and across the Charles River into Cambridge. Figure 2-3 shows the neighborhoods meeting the EEA environmental justice criteria within a 0.5-mile radius of the corridor:

- The neighborhood north of Cambridge Street meets the low income and minority criteria, with an inset neighborhood meeting foreign-born and minority criteria;
- The eastern end of Cambridge Street, including the Bowdoin Station, is in a neighborhood meeting minority criteria;
- Three neighborhoods to the southeast and south meet some or all criteria; and
- Four neighborhoods to the west meet some or all criteria.

¹⁰ MPO. 2007. *Journey to 2030- Amendment; Transportation Plan of the Boston Region Metropolitan Planning Organization*. See Chapter 14. Available on-line at http://www.bostonmpo.org/bostonmpo/3_programs/1_transportation_plan/plan.html. Accessed on 2 November 2009.

¹¹ MPO. 2007. *Environmental Justice Area Demographics*. MPO website: http://www.bostonmpo.org/bostonmpo/3_programs/4_regional_equity/EJ_Demographics.pdf. Accessed on 2 November 2009.

Table 2-1 lists the fraction of the population in each environmental justice census block meeting the EEA environmental justice criteria.

Table 2-1 State-listed Environmental Justice Populations within 0.5 mile of the Project Area

Project Area		Fraction of Population Meeting Criteria Within Each Designated Environmental Justice Neighborhood			
Block Group	Geographic Location and Neighborhood(s)	Foreign-Born	Low Income	Minority	Lacking English Language Proficiency
0250203001	North of Cambridge Street; West End, North End, and Downtown	8.1	25.7	48.8	5.1
0250203002	Inset north of Cambridge Street; West End and Downtown	28.8	7.8	28.0	7.6
0250303003	East end of Project area; Downtown	16.6	34.4	32.9	6.5
0250701001	Southeast of Project area; Downtown	52.7	36.9	62.7	38.7
0250701002	Southeast of Project area; Downtown and Chinatown/Leather District	50.8	43.8	63.4	29.2
0250701003	South of Project area; Beacon Hill, Downtown, and Chinatown/Leather District	27.7	24.0	37.8	28.1
0250703001	South of Project area; Beacon Hill	28.7	26.6	33.0	20.7
0173531001	West of Project area; MIT (Cambridge)	36.9	12.4	41.7	7.4
0173524002	West of Project area; East Cambridge	42.7	34.1	88.6	25.3
0173523001	Northwest of Project area; East Cambridge	27.4	15.1	28.4	7.6
0173521001	Northwest of Project area; East Cambridge	29.2	20.0	31.4	5.0

Source: US Census data (2000), MassGIS.

Bold denotes values meeting environmental justice neighborhood criteria. Does not apply to Low Income neighborhoods, the designation for which is based on median household income for the neighborhood (as compared to the state-wide average) rather than the fraction of the population meeting the criteria.

All of the environmental justice neighborhoods within a 0.5-mile radius of the Project area meet minority criteria, all but two meet foreign-born criteria, four meet low-income criteria, and four meet English language proficiency criteria. These data reflect the “cosmopolitan” nature of the Boston metropolitan area, with relatively high percentages of minority and foreign-born residents. However, most residents are not low income and are proficient in speaking English.

As mentioned above, none of the TAZs in central Boston, including the Red Line/Blue Line Connector Project area, meet MPO environmental justice criteria.

2.3 Selected Resource Characteristics of the Project Area

The Project may impact air quality, noise and vibration, traffic, parks, and the social environment, potentially affecting environmental justice populations. The following paragraphs describe the existing conditions for these resources in the Project area.

The Project is located within an area defined as in moderate non-attainment of the National Ambient Air Quality Standards (NAAQS) for ozone, as is all of Massachusetts. A State Implementation Plan (SIP) has been prepared by the Massachusetts Department of Environmental Protection (MassDEP) to describe to the US Environmental Protection Agency methods that the state will use to meet the ozone NAAQS. The Project is one component of the SIP, specifically included in the MassDEP regulations amended to the SIP. One goal of the Project is to reduce automobile traffic, which generates air pollutants that are precursors to ozone, and therefore improve air quality.

Located within a highly developed area of Boston, the noise level in the Project area is characterized by transportation (automobile, bus, and truck traffic) along Cambridge Street and extending into intersecting side streets. The busy commercial, institutional (medical facilities), and residential neighborhoods along Cambridge Street have relatively high ambient noise levels. Rail service in the Project area is underground at the east end, not contributing to ambient noise. At the west end, the Red Line is aboveground as it passes through the Charles/MGH Station, but diverts to the southeast and descends underground less than a block from Cambridge Street.

Similarly, existing vibration levels are due to surface traffic. Subsurface trains do not contribute to vibration that would affect structures or be sensed by people.

Cambridge Street is a four-lane arterial that provides local access to MGH and other medical facilities and businesses along the corridor, as well as thoroughfare for traffic between Downtown Boston and Cambridge. Traffic is heavy along Cambridge Street, and variable along intersecting streets. The streetscape in the Project area was recently renovated, with new traffic controls put in place.

Two parks lie within the Project area, at either end. Cardinal Cushing Park, at the intersection of Cambridge Street and New Chardon Street, is a small public park featuring a grassed area, benches, and shade trees. The Bowdoin Station headhouse is at the eastern end of the park. Charles Circle, at the west end, is currently occupied by the Charles/MGH Station. Formerly a landscaped center of a traffic circle, the site is now fully developed as the station. A few trees provide shade on either side of the Red Line tracks. Immediately west of the Charles/MGH Station, at the westernmost extent of the Project area, is the Charles River Reservation. This park extends from Boston Harbor upstream along the Charles River for approximately 20 miles. Other

nearby parks include the Government Center and City Hall Plaza, just east of the Project area.

The highly developed nature of the Cambridge Street corridor, including transit stations at either end, a combination of mixed uses (commercial, industrial, and residential), and compact, dense development allows for strong neighborhood cohesion. The recent Cambridge Street renovation, portions of which are ongoing, included pedestrian-oriented development and streetscape. Although traffic is heavy on Cambridge Street, the neighborhood is not fragmented (segregated) by the corridor.

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3

Environmental Consequences

This Chapter describes the direct and indirect impacts to environmental justice populations that would result from the Red Line/Blue Line Connector Project.

3.1 Project Overview

The Red Line/Blue Line Connector Project would consist of a construction phase, during which the Blue Line extension from the Bowdoin to the Charles/MGH Station would be built, and the operational phase, during which the Blue Line trains would continue past the current Bowdoin Station to the Charles/MGH Station. Construction phase activities could adversely impact environmental justice populations due to noise, air emissions, and traffic (pedestrian and automobile) disruption. However, each of these adverse impacts is very local in nature, with measurable effects generally limited to a few hundred feet from the source. During operations, potential adverse impacts to environmental justice populations could arise from increased noise or vibration, decreased access to parks, and changes in the social environment (neighborhood fragmentation). Operational phase activities (which are expected to continue indefinitely into the future) also may beneficially impact environmental justice populations due to increased access to transit. These beneficial impacts can be local to distant in nature: local effects accrue to persons within walking distance of the stations, while distant effects accrue to persons using the connected transit service to access points outside of the Project area.

As described in the Definition of Alternatives Report,¹² the Build Alternatives under consideration include eliminating or relocating the Bowdoin Station. The current configuration of Bowdoin Station is not compatible with an extension to the Charles/MGH Station, and it would require relocating one platform to accommodate longer (six car) trains for the extended service. However, few passengers board Blue Line trains at Bowdoin Station compared to the nearby Government Center Station. Accordingly, eliminating the station is one alternative for the Project. In any case,

¹² EOT. 2009. *Red Line-Blue Line Connector Project- Definition of Alternatives Report*. Commonwealth of Massachusetts, Executive Office of Transportation and Public Works. Prepared by Vanasse Hangen Brustlin, Inc.: Boston.

there would not be any new stations constructed for the Project. At the Charles/MGH Station, a new underground platform for the Blue Line would be constructed adjacent to the existing headhouse and elevated platform for the Red Line, at a lower level. Connections between the two platform levels would be made via stairways, escalators and elevators.

The following sections describe the potential adverse or beneficial impacts to environmental justice populations that would result from the Build Alternatives and the construction activities. The No-Build Alternative is also described, as a baseline condition to which the operational alternatives may be compared.

3.2 No-Build Alternative

Under the No-Build Alternative, it is assumed that Blue Line operations would remain similar to current operations with the exception of implementing the following infrastructure improvements proposed in the MBTA's long range transportation plan:¹³

- Signal and Train Control Improvements on the Blue Line- This project would increase peak capacity on the Blue Line by installing new-generation signal systems, which will allow for closer spacing between trains than present signal equipment allows. Peak spacing between trains on the Blue Line is 3.5 minutes on average. Applying new signal technology could allow train frequencies of every 2 minutes, a 75-percent increase in capacity.
- Accessibility Enhancements- Stations on the Blue Line currently have high level platforms, meaning platforms at the same height as vehicle floors. In general, accessibility improvements to stations will consist of installing elevators to transport passengers between the platform levels and the streets outside the stations, and eliminating obstacles to wheelchair circulation within the stations. All stations on the Blue Line will be Americans with Disabilities Act (ADA) accessible.

The Red Line operations would be unchanged. Under the No-Build Alternative, the Red Line and Blue Line would not be directly connected. Riders transferring between the two lines would use a short segment of the Green Line or the Orange Line. The transfer penalty reduces the transit mode share for these trips. In addition, transfers between the Blue and Green Lines at Government Center Station are currently problematic in that Government Center Station is not yet compliant with ADA accessibility standards. The ridership capacity of the Blue Line is restricted at the Bowdoin Station. Six-car trains are used almost exclusively by the Blue Line, but the

¹³ MBTA. 2009. *Capital Investment Program, FY 2010-2014*. Available on-line at: http://www.mbtta.com/uploadedfiles/About_the_T/Financials/MBTA%20FY10-FY14%20CIP.pdf. Accessed 2 November 2009.

eastbound (inbound) platform at Bowdoin Station is only able to accommodate a four-car train due to length of the platform.

There would be no adverse impacts to either environmental justice or non-environmental justice populations from the No-Build Alternative. There would be no increases in noise or vibration, decreases in access to parks, or changes to the social environment.

The impact to environmental justice populations from the No-Build Alternative would be continued indirect connections between the Red Line and the Blue Line, with resulting poor access to transit to jobs and educational opportunities along either line. Although capacity and accessibility enhancements would be made, these changes will not beneficially affect environmental justice populations in terms of access to jobs and education but they would improve system performance and accessibility for disabled persons.

3.3 Alternative 1: Eliminate Bowdoin Station

This Alternative would eliminate the existing Bowdoin Station. The station would be decommissioned or demolished. Riders would use the Government Center Station, about 1,000 feet to the east, or the new station at Charles/MGH, about 2,000 feet to the west, to access the Blue Line or Red Line. The Bowdoin Station headhouse at Cardinal Cushing Park would be retained for use as emergency egress from the subway.

There would be no adverse impacts to either environmental justice or non-environmental justice populations from Alternative 1. There would be no increases in noise or vibration, decreases in access to parks, or changes to the social environment.

The beneficial impacts to the public of eliminating Bowdoin Station are potentially higher system ridership because of faster travel times. The adverse impact of eliminating the Bowdoin Station would be decreased access to transit. However, riders would walk to either the Government Center Station or the Charles/MGH Station.

The CTPS study of impacts to local environmental justice areas (Appendix A), based on MPO environmental justice criteria, indicates that there would be a small benefit for residents in Cambridge in access to basic and retail employment for this alternative. Access would be improved, as compared to the No-Build Alternative, by 0.3 to 0.6 percent for environmental justice populations, and 0.1 to 0.3 percent for non-environmental justice populations. The improvement in travel time to jobs would be on the order of 4 minutes, less than 0.1 percent. There would be no improvement in access or travel times to jobs for Boston residents, either environmental justice or non-environmental justice populations. There would be a small improvement in access to hospitals for non-environmental justice populations

in Boston, at 0.1 percent. Access to colleges or universities would see a very small improvement, at less than 0.1 percent.

There would be a similar, modest benefit for residents of Revere in terms of transit access to all categories of jobs, ranging up to 1.6 percent improvement in access to service employment for environmental justice populations for Alternative 1. In all cases, environmental justice populations in Revere would realize a greater improvement in access to jobs than non-environmental justice populations. The transit time improvements for Revere residents would be below the CTPS reporting threshold (0.1 percent).

There would be no change in transit access or times in accessibility to colleges and universities for Revere residents, but transit access to hospitals for environmental justice populations would improve markedly, at 6.1 percent for this Alternative. A lesser improvement, of 0.5 percent, would be realized by non-environmental justice populations in Revere. Transit time to hospitals would improve slightly for both populations, at 0.1 percent for environmental justice populations and 0.5 percent for non-environmental justice populations.

There would be no improvements in mobility (changes in weighted average travel times) for residents of Revere under this Alternative.

There would be no substantive adverse impacts to any populations from this Alternative. Accordingly, environmental justice populations would not be disproportionately impacted. Beneficial impacts from this Alternative are small improvements in access to some job categories and hospitals for environmental justice and non-environmental justice populations. Improvements in transit time to hospitals would also benefit both populations; other transit time improvements are relatively small on a percentage basis, at about 4 minutes.

3.4 Alternative 2: Relocate Bowdoin Station

This Alternative would relocate the inbound and outbound platforms of Bowdoin Station while maintaining the existing mezzanine and headhouse. Under this scheme, Bowdoin Station would be able to accommodate six-car trains, improving the ridership capacity at this station. Access to the platforms from the headhouse would be made via ADA-compatible escalators, elevators and stairway connections. It is assumed that the hours of operation and frequencies on the Blue Line would remain unchanged under this alternative, except the hours of operation at the Bowdoin Station would be expanded to match the other Blue Line stations.

There would be no adverse impacts to either environmental justice or non-environmental justice populations from Alternative 2. There would be no increases in noise or vibration, decreases in access to parks, or changes to the social environment.

The beneficial impacts to the public of retaining the Bowdoin Station, with a relocated inbound and outbound platforms, are continued access to transit and improved ridership capacity. The adverse impact of retaining the Bowdoin Station is increased travel time due to an extra stop on the Blue Line.

The CTPS study of impacts to local environmental justice areas (provided in Appendix A) meeting MPO criteria indicates that there would be a small benefit for residents of Cambridge in access to basic and retail employment for this alternative. Access would be improved, as compared to the No-Build Alternative, by 0.3 to 0.6 percent for environmental justice populations, and 0.1 to 0.3 percent for non-environmental justice populations. The improvement in travel time to jobs would be on the order of 4 minutes, less than 0.1 percent. There would be no improvement in access or travel times to jobs for Boston residents, either environmental justice or non-environmental justice populations. Non-environmental justice populations in Boston would realize a small improvement in access to hospitals, at 0.2 percent. Access to colleges for residents of Cambridge and Boston would see a very small improvement, at less than 0.1 percent.

There would be a similar, modest benefit for residents of Revere in terms of transit access to all categories of jobs, ranging up to 1.7 percent improvement in access to service employment for environmental justice populations for this Alternative. In all cases, environmental justice populations in Revere would realize a greater improvement in access to jobs than non-environmental justice populations. The transit time improvements for Revere residents would be below the CTPS reporting threshold (0.1 percent).

There would be no change in transit access or times in accessibility to colleges and universities for Revere residents, but transit access to hospitals for environmental justice populations would improve markedly, at 6.2 percent for this Alternative. A lesser improvement, of 0.7 percent, would be realized by non-environmental justice populations in Revere. Transit time to hospitals would improve slightly for both populations, at 0.2 percent for environmental justice populations and 0.5 percent for non-environmental justice populations.

There would be no improvements in mobility (changes in weighted average travel times) for residents of Revere under this Alternative.

There would be no substantive adverse impacts to any populations from this Alternative. Accordingly, environmental justice populations would not be disproportionately impacted. Beneficial impacts from this Alternative are small improvements in access to some job categories and hospitals for environmental justice and non-environmental justice populations. Improvements in transit time to hospitals would also benefit both populations; other transit time improvements are relatively small on a percentage basis, at about 4 minutes.

3.5 Construction Activities

The tunnels for the Blue Line extension under Cambridge Street west of the Bowdoin Station would be constructed by a horizontal boring machine. This machine would bore the two (in-bound and out-bound) tunnels beneath existing infrastructure. Except at access points at either end of the alignment, all work along this segment would be completed below grade. Surface disturbance would be limited; any required detours would be scheduled at night or on weekends, rather than during weekday work hours. East of Bowdoin Station, for approximately 800 feet, cut-and-cover construction would be used to realign the existing tracks from Government Station. Traffic would be detoured along this section of Cambridge Street during the construction period. Excavation may also be used to construct the short tail tracks immediately west of the Charles/MGH Station. The open trenches would be covered with traffic decking when possible.

A staging area, tentatively established as a portion of the Massachusetts Eye and Ear Infirmary parking lot immediately north of the Charles/MGH Station, would be the main access point. A second access point would be established at the Bowdoin Station to allow for removal of the boring machine. Both access points would be within environmental justice neighborhoods.

A Project requirement is that four lanes of automobile traffic, and unimpeded pedestrian traffic, be retained at all times except during night-time and weekend work periods. Traffic would be disturbed by the temporary detours. Noise and air emission sources would be limited to the access points and ventilation shaft locations.

Depending upon which Alternative is selected, the Bowdoin Station would be reconstructed or decommissioned. For both Alternatives, new subsurface platforms would be added to the Charles/MGH Station for the extended Blue Line. No traffic, noise, or air impacts to the public are expected from the construction activities associated with these subsurface construction activities. Pedestrian access to the Cardinal Cushing Park may be temporarily restricted. Surface-level work in the Charles/MGH Station to construct the interior pedestrian access to the subsurface levels would result in increased noise levels and air emissions (primarily dust) within the station during construction activities.

The construction phase activities for the tunnels would:

- Disturb traffic temporarily, with detours and nighttime or weekend work periods, constricting business hours.

- Not result in noise impacts to sensitive receptors, given the predominant subsurface nature of the work and existing background noise levels within this highly developed area of the city.¹⁴
- Not result in air emission impacts, also given the predominant subsurface nature of the work and regulatory controls on emission sources.¹⁵

Park access restrictions, traffic disruptions, noise level increases, and air emissions increases would be temporary and experienced by residents of environmental justice and non-environmental justice neighborhoods as well as the general public. Construction activities would be conducted in accordance with regulatory requirements and management practices (e.g., noise and dust controls). Environmental justice populations would not be disproportionately impacted by the Red Line/Blue Line Connector Project construction activities.

3.6 Summary

The Red Line/Blue Line Connector Project would be located in and near environmental justice neighborhoods and additional environmental justice neighborhoods are located along these transit lines within Boston and suburbs served by the lines.

Construction activities would have temporary impacts to traffic, park access, noise levels, and air quality. These impacts would be borne by both environmental justice and non-environmental justice populations. Environmental justice populations would not be disproportionately impacted by construction activities.

Operational alternatives include the No-Build Alternative, Alternative 1, or Alternative 2. The No-Build Alternative would include some operational enhancements but would not directly connect the Red Line and the Blue Line. Environmental justice populations would not benefit, in terms of transit access or transit time, from the No-Build Alternative. There would be some station accessibility and system performance improvements from other, unrelated Blue Line projects.

Alternative 1, eliminating Bowdoin Station, would decrease travel times but eliminate an access point (as compared to either the No-Build Alternative or retaining the station). Riders currently using Bowdoin Station would instead access transit at the Government Center Station or the Charles/MGH Station, located approximately 1,000 feet and 2,000 feet, respectively, from the Bowdoin Station location. These distances are less than the 0.5-mile distance typically considered the maximum pedestrian walking distance to transit. Alternative 2, retaining Bowdoin Station, would continue to allow access to transit at this location but increase travel

¹⁴ Noise Study reference.

¹⁵ Air Study reference.

times (as compared to eliminating the station) along the Blue Line due to an additional stop. For both Alternatives, the improvements in travel time (approximately 4 minutes) over the No-Build Alternative are less than 0.1 percent of the current travel time for either local environmental justice or non-environmental justice populations.

As represented by residents of Revere, regional environmental justice populations would realize slight to modest gains in transit access to jobs or hospitals under either Alternative. Similar benefits would be realized by non-environmental justice populations. Transit times to hospitals would be improved, under either alternative, for both environmental justice and non-environmental justice populations. No other improvements in travel time would be realized by either population group in Revere.

Environmental justice populations would not disproportionately impacted by adverse effects of either alternative of the Red Line/Blue Line Connector Project, and would benefit from either Build Alternative as compared to the No-Build Alternative. The benefits would be principally in terms of transit access rather than transit time. Both Build Alternatives confer these benefits; there is no disproportionate adverse effect to environmental justice populations, and no difference between the alternatives.

4

Public Outreach

Public outreach for the Red Line/Blue Line Connector Project includes a community working group, Project website, public meetings, a bilingual fact sheet, and media publications. MassDOT has established a Red Line/Blue Line Connector Working Group with neighborhood, civic, business, and community representation. The Working Group meets bi-monthly and provides important guidance and input to MassDOT and the consultant team on a range of issues relating to the Project. MassDOT anticipates that the group will meet at least six times during the current phase of the Project. A Working Group and Team Contact List are included in Appendix B.

MassDOT has created a Project website where Working Group members and the public can read and download reports, presentations and summary notes. The website is promoted in all Project emails and publications: <http://www.eot.state.ma.us/redblue/>. The site is updated regularly.

Public meetings will take place in the community in spring 2010 when there are Project milestones for review and comment. In addition, MassDOT plans to make presentations to local and regional groups to introduce the Project, gather comments and consider suggestions and ideas for the Project. The team meets with Project direct abutters as well to gather information for engineering and to assess potential impacts.

MassDOT also plans to produce a Project fact sheet in advance of Project milestones to circulate in electronic and print formats to encourage participation in and comment on the Project. The fact sheet will be translated into Spanish, posted on the website, and distributed during public meetings. MassDOT provides media advisories on all Project meetings and events to local and regional media. Notices are also sent to everyone who has signed up for email announcements.

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Figures

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Appendices

- Appendix A: CTPS Study
- Appendix B: Working Group and Team Contact List

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Appendix A: CTPS Study

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Appendix B: Working Group and Team Contact List

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